

PATENT
Docket GE136081

REMARKS

Reconsideration of the above identified application is respectfully requested.

The specification has been amended at paras. 53 and 55 to introduce the corresponding species of integral stems 74, 80, and 84 as illustrated in the corresponding figures, and to conform with paras. 36 and 66, for example.

Applicant notes the substantial breadth of interpretation of Applicant's claims being proffered by the examiner, which correspondingly enlarges claim scope in later infringement analysis of the file wrapper. However, the examiner has failed to afford due weight to specific features and cooperation of features which distinguish over the applied art.

Applicant traverses the rejection of claims 1-3, 9, 11-17, and 25-27 under Section 102(b) over Koschier.

It is firstly noted that reference Koschier was cited by the Applicant and is well distinguished by the present claims.

Fundamentally, the examiner merely opines, without any evidentiary support, that "Koschier discloses a turbine rear frame (10)." This is clear error, and not even the typical broad interpretation provided in examination practice can change the clear teachings of this reference.

Figure 1 of Applicant's application discloses the notoriously well known and fundamental components of the exemplary gas turbine engine 10.

The basic turbofan engine includes a compressor 14, combustor 16, HPT 18, and LPT 20; and the turbine rear frame 34 follows aft the LPT 20.

Applicant's claims specifically recite a "turbine rear frame," and the examiner has failed to afford any weight thereto, let alone due weight as warranted thereto when these claims are read in light of the specification and interpreted by one skilled in the art.

PATENT
Docket GE136081

The turbine rear frame is not a compressor.

The turbine rear frame is not a combustor.

The turbine rear frame is not a high pressure turbine (HPT).

And, the turbine rear frame is not a low pressure turbine (LPT).

These components may be merely words, but the examiner is duty bound under the MPEP to afford due weight thereto, and this, the examiner has not done.

Instead, the examiner attempts to apply the Koschier reference with the mere examiner argument that element 10 is "a turbine rear frame," when it is clearly not.

Col. 1, ll. 9+, of Koschier explain well known background information that the gas turbine engine includes a compressor, combustor, and turbine; and that the turbine includes a turbine nozzle with vanes supported by bands. And, the HPT nozzle receives the hottest gases from the combustor and channels them to the turbine rotor blades downstream therefrom.

At col. 2, ll. 17+, Koschier clearly introduces the "high pressure turbine nozzle 10 for use in a gas turbine engine downstream of a combustor thereof."

Note that the analogous HPT nozzle in Applicant's figure 1 would be found in the HPT 18 immediately behind the combustor 16, which is well upstream of the LPT 20 and the turbine rear frame 34 being recited in the various claims.

The environment in the engine for the HPT and turbine rear frame are quite different.

The structures of the HPT nozzle and turbine rear frame are quite different.

The function of the HP nozzle and turbine rear frame are quite different.

And, the performance of the HP nozzle and turbine rear frame are also quite different.

Accordingly, the examiner's attempt to interpret by rote the HPT nozzle 10 of Koschier for the turbine rear frame

PATENT
Docket GE136081

recited in Applicant's claims is both erroneous, and not supported by any evidence in the Koschier reference, nor supported by any identified MPEP provision or case law.

All of the rejections therefore lack merit, and must be withdrawn.

Furthermore, all of the rejected claims recite outlet guide vanes 36 mounted between bands 38,40.

The examiner again attempts to assert by rote that Koschier discloses "outlet guide vanes (18)," when, yet again, there is no evidence of this.

Koschier expressly discloses a row of ceramic nozzle vanes 18 for the HPT nozzle disposed aft of the combustor, which have no relevance to the OGVs of a turbine rear frame which would be located at the aft end of the engine in Koschier.

The nozzle vanes 18 of Koschier are fundamentally different than OGVs in location, environment, function, and performance, and the examiner has not shown otherwise.

Even a cursory computer search by the examiner of the prior art would no doubt uncover many references for OGVs as those elements would be understood by one skilled in the art, and it is not likely that even that computer search would find any reference in which any turbine nozzle vanes would be described as an OGV.

Instead, the examiner must intentionally disregard express claim language; the examiner must also disregard the express description in the specification and figures which support Applicant's claims; and the examiner must also expressly disregard even the basic teachings of the applied reference Koschier itself because this is a clear expedient in the typical prosecution practice before the USPTO, but clearly not supported by the stringent requirements of the MPEP.

Independent claims 1 & 11 recite a turbine rear frame 34 including OGVs 36 each formed by distinct forward and aft segments in a special combination with special function for a

PATENT
Docket: GE136081

special environment having no counterpart in Koschier.

Instead, the examiner applies Koschier for the ceramic nozzle vanes 18 only because those ceramic vanes have two segments 20,22, without regard to their raison d'etre; and without regard to the fundamentally different construction, function, and performance in the HP nozzle located immediately aft of the combustor and the hottest combustion gases discharged therefrom.

Yet further, independent claims 1 and 11 also recite that the prow 44 and stern 46 are integrally joined together by the narrow septum 48.

And, yet again, the examiner merely contends by rote assertion that Koschier discloses a "septum (32)," when, yet again, there is no evidence in Koschier to support this bald contention.

Koschier expressly discloses a seal 32 between the two ceramic segments 20,22. Why? Because the ceramic vanes 18 have a special configuration and assembly, and require the seal 32. But, that seal 32 clearly does not join the two segments 20,22 together in any manner, let alone integrally.

What does Koschier teach?

Koschier firstly teaches, for very special reasons, that the CMC ceramic forward segments 20 are "integrally joined at opposite radial ends to corresponding ones of the bands 14,16 in a unitary or one-piece assembly," col 2, ll. 36+.

The monolithic ceramic aft segments 22 are specifically configured and "trapped in complementary sockets 24 in respective ones of the bands 14,16," col. 2, ll. 39+.

The forward segments are clearly not integrally joined to the aft segments, but instead intentionally spaced apart therefrom by the gap 26 for very special reasons, col. 4, ll. 45+.

The seal 32 is a separate and distinct element simply trapped in recesses between the two segments 20,22 to inhibit combustion gas leakage, col. 4, ll. 58+.

In contrast, Applicant's independent claims 1 & 11

PATENT
Docket GE136081

expressly recite that the prows 44 are integrally joined to the sterns 46 by the septum 48. Integrally joined. This means that the prow 44, septum 48, and prow 44 are integrally joined together; yet the two segments 20,22 in Koschier are not integrally joined to each other, but instead joined to the bands, with the seal 32 merely providing a filling or sealing function between the spaced apart segments.

Accordingly, these are multiple and exemplary features of the two independent claims 1 & 11 having no counterpart in Koschier, since Koschier clearly discloses a different component, having different elements, function, performance, and environment.

As for the various dependent claims being rejected by the examiner, the examiner's contentions therefor are again mere rote recapitulation of the recited features, without due regard to the fundamentally different nature of the turbine rear frame being recited, or the functional cooperation of the various elements in combination.

Accordingly, withdrawal of the rejection of claims 1-3, 9, 11-17, and 25-27 under Section 102(b) over Koschier is warranted and is requested.

Applicant traverses the rejection of claims 4, 5, and 18 under Section 103(a) over Koschier and Stalker '663.

It is not seen how either reference Koschier or Stalker '663 is analogous art since neither reference relates to turbine rear frames, nor the specific problems confronting the Applicant.

The MPEP includes sections on the test for nonanalogous art, and case law prevents the examiner from recharacterizing references for their fields of endeavor or problems in attempting to invoke those references.

No doubt the examiner will reconsider the applicable test for applying these references, but the examiner can not overcome the basic teachings of Koschier specific to HP nozzles having ceramic nozzle vanes in contradistinction from turbine rear frames having OGVs; or the basic teachings of

PATENT
Docket GE136081

Stalker '663 for compressors having rotor blades in contradistinction from turbine rear frames having stator OGVs.

The examiner has failed to show how Koschier has any analogous structure, and clearly Koschier does not disclose the invention as substantially claimed. That contention is mere rote assertion in the expedient of presenting bald rejections.

The examiner's mere contention to combine Stalker '663 and Koschier "to control boundary layer on the vane" is not the legal motivation mandated by the MPEP, nor does it meet the stringent test required under the MPEP; and it is just additional rote assertion made without regard to the whole of the claims being rejected or the references themselves, and without regard to the knowledge of one skilled in the art.

Koschier clearly teaches a HP nozzle for the first stage of a turbine through which combustion gases are discharged for extracting energy therefrom.

Stalker '663 clearly teaches an air compressor which pressurizes air for subsequent combustion with fuel well upstream of any turbine.

In Koschier, the nozzle has ceramic stator vanes. In Stalker '663, the compressor has metal rotor blades.

The differences between stator vanes and rotor blades in a turbine and in a compressor could not be any more profound, nor any more black and white, especially to one skilled in the art.

The nozzle vanes are stationary and mounted between the outer and inner bands, and are part of the turbine which expands hot combustion gases.

The compressor blades are rotary, and extend radially outwardly from a rotor disk, and not attached to the stationary outer shroud, and function to pressurize air before combustion with fuel in the combustor.

The examiner must necessarily disregard these fundamental differences since his search has uncovered

PATENT
Docket: GE136081

various forms of airfoils without regard to the different nature thereof, and this disregard of fundamental differences is additional error, in the hindsight attempt to fabricate the rejections with rote assertion without regard to plain context.

Claims 4 & 18 recite means 72 for withdrawing exhaust flow from the slots 58. That exhaust flow is hot combustion gases in the recited turbine rear frame, not cool pressurized air.

The examiner attempts to use the isolated teaching of the induction slots 42 in the compressor blades 40 of Stalker '663 for extracting pressurized air, without regard to the fundamental differences between a turbine nozzle and an air compressor.

Yet, how are the induction slots of Stalker '663 relevant to the ceramic nozzle vanes of Koschier which are located in a HP nozzle over which flows, not mere air, but hot combustion gases?

Koschier expressly teaches that pressurized air 28 is discharged through the vanes for cooling the vanes against the hot combustion gases.

If the vanes in Koschier discharge coolant, why would one skilled in the art change that function to instead ingest hot combustion gases as the examiner's combination with Stalker '663 would require?

Clearly this combination proffered by the examiner is not tenable, and would be fatal to the turbine nozzle in Koschier, and is against the very teachings of both references Koschier and Stalker '663 being applied in hindsight without regard to the fundamental teachings thereof, and without regard to the highly esoteric nature of gas turbine engine design as would be well known by those skilled in the art.

The examiner must disregard the very teachings of these references, because this is necessary in the attempt to fabricate rejections based on the mere appearance of naked

PATENT
Docket: GE136081

elements being reconstructed in different combinations and for different purposes not contemplated in the two references themselves.

The examiner compounds the errors of rejection in the rote rejection of claim 5 which expressly recites both means 70 for supplying pressurized air into the vanes, and means 72 for withdrawing exhaust flow from those very same vanes.

The examiner's attempt to combine Stalker '663 with Koschier for "boundary layer control" is a rote assertion made clearly without regard to the fundamental teachings of either reference.

Withdrawing exhaust flow through the nozzle vanes in Koschier would clearly be fatal to the operation thereof, and is untenable, and the examiner has not shown otherwise in his rush to reject the claims.

Accordingly, withdrawal of the rejection of claims 4, 5, and 18 under Section 103(a) over Koschier and Stalker '663 is warranted and is requested.

Applicant traverses the rejection of claims 6, 19, and 20 under Section 103(a) over Koschier and Stalker '910.

Yet again the examiner has failed to show any similarity whatsoever between the turbine nozzle vane of Koschier and the turbine rear frames recited in these claims, and the mere examiner assertion of substantial disclosure lacks merit.

Neither Koschier nor Stalker '910 are analogous art. Koschier is addressed above, and Stalker '910, like Stalker '663, relates to axial compressors which are not the same as turbine rear frames, and the problems in Stalker '910 are quite different than the problems confronting the Applicant, and therefore irrelevant.

Yet again, the examiner now applies Stalker '910 without regard to context in a blind reconstruction of naked elements.

Claims 6 and 19 recite a forward facing slot 58 in the vane suction side; and Stalker '910 illustrates the slot 70 in the convex side of the stator blade 56. This is

PATENT
Docket: GE136081

sufficient for the examiner; yet this is clearly not sufficient under the stringent requirements of the MPEP; nor to one skilled in the art.

The examiner must necessarily overlook and disregard that the vanes in Koschier are turbine nozzle vanes specifically configured for use in a turbine through which hot combustion gases expand.

This is in stark contrast with the stator blades 56 of Stalker '910 which are specifically configured, quite differently, for use in an axial compressor for pressurizing (compressing) air.

The environments of a compressor and turbine are quite different; the working fluids of air and combustion gases are quite different; and their operation could not be any more opposite.

Yet, the examiner in the rush to reject the claims merely asserts that one skilled in the art would introduce the slots 70 of Stalker '910 in the nozzle vanes of Koschier; this, without regard to the very teachings of these disparate references; and this, without any showing of legal motivation based on any identified evidence.

As indicated above, the introduction of the extraction slot 70 from Stalker '910 in the nozzle vane of Koschier would be fatal to the operation of the nozzle vane due to the ingestion of the hot combustion gases discharged from the combustor.

Hot combustion gases have no similarity with cool pressurized air, and the examiner has not shown otherwise.

The examiner must also overlook that Koschier expressly teaches the discharge of pressurized air through the turbine vanes; and not the ingestion thereof.

Why then would Koschier be modified to reverse the operation of the channels therein to ingest hot combustion gases into the vanes instead of discharging cooling air from the vanes?

Claim 20 recites a row of apertures 68 feeding the

PATENT
Docket GE136081

forward facing slot 58 which is unobstructed. This is in stark contrast with Koschier in which both slots face aft and are obstructed. This is also in stark contrast with Stalker '910 which lacks any row of apertures.

And, fundamentally, this is in stark contrast with Stalker '910 which ingests air into the blade, whereas the vanes in Koschier discharge pressurized air therefrom, with ingestion of hot gases being fatal to the operation of the nozzle vane for its intended purpose.

Accordingly, withdrawal of the rejection of claims 6, 19, and 20 under Section 103(a) over Koschier and Stalker '910 is warranted and is requested.

Applicant traverses the rejection of claim 30 under Section 103(a) over Koschier and Stalker '910.

This rejection by the examiner further compounds the errors of examination, and is further evidence, per se, of the hindsight reconstruction of claim 30 without regard to the whole of that claim, without regard to the whole of Koschier and Stalker '910, and without any showing of legal motivation.

Claim 30 recites both a forward facing slot 58 on the vane suction side, and an aft facings slot 64 on the vane pressure side, with the septum 48 being spaced from both sides.

Blindly, the examiner attempts to select only the slot 70 from Stalker '910 for some unexplained combination with Koschier, without regard to the fundamental operation of these references.

The vane in Koschier is a turbine nozzle vane over which hot combustion gases flow. The blade in Stalker '910 is a compressor blade over which air is being compressed.

The ingestion of hot combustion gases in the vane of Koschier by the examiner's introduction of the slot 70 from Stalker '910 would be fatal to the operation of the nozzle vane as indicated above.

The blade 56 in Stalker '910 lacks any row of apertures,

PATENT
Docket GE136081

and the slot 70 is on the convex side only, with the concave side being continuous.

Koschier expressly teaches that the gap 26 faces aft on both sides of the vane for discharging the coolant 28, and the seal 32 prevents ingestion of the hot combustion gases, col. 4, ll. 58+.

The examiner must disregard these fundamental teachings of Koschier in the rote combination therewith of Stalker '910 since Stalker '910 discloses a naked slot 70, and the examiner requires that slot 70 to fabricate the rejection, without regard to the structure and environment and the function of the different features of the different nozzle vane and compressor blade of these references.

The examiner's rote combination of the naked elements of Stalker '663 and Stalker '910 with Koschier is conspicuous and poisons all of the rejections.

Accordingly, withdrawal of the rejection of claim 30 under Section 103(a) over Koschier and Stalker '910 is warranted and is requested.

In view of the examiner's overly broad interpretation of the references Koschier, Stalker '663, and Stalker '910; and Applicant's claims being rejected, the scope of those claims would appear to be without limit.

What weight should be given to the individual claim elements?

What weight should be given to the combination of claim elements in each claim?

The examiner's next office action will help determine the metes and bounds of these claims, and how they distinguish over the references of record.

Nevertheless, Applicant has chosen to amend selected claims.

Claim 2 is being amended to recite the unitary species of the prow and stern as disclosed at para. 36.

The forward and aft ceramic segments in Koschier are clearly not a unitary assembly.

PATENT
Docket GE136081

Claim 2 has also been amended to introduce a missing article.

Claim 15 has been amended to also recite the unitary assembly of the prow, stern, and septum as disclosed at para. 36, which lacks any corresponding unitary structure in Koschier.

Claim 16 has been amended to recite the metal vanes, in contradistinction to the ceramic vanes of Koschier.

Of course, the examiner may simply argue an obvious change in material, but caution should be exercised here because the MPEP mandates evaluating claims and references in the whole.

Koschier clearly discloses a very special turbine nozzle assembly specifically configured especially for ceramic components and the special problems associated therewith. The mere substitution of metal for the ceramic has no basis in evidence since that would undermine the *raison d'etre* for that very special assembly of ceramic components, and the associated complexity thereof.

Without ceramic vane components in Koschier, there would be no reason for the special construction thereof, and one skilled in the art would then look to the conventional construction of metal turbine nozzles in which the metal vanes thereof of typically unitary castings.

Claim 18 has also been amended to recite the combination of the OGVs 36 downstream of the last stage turbine blades from which they deswirl the exhaust flow as disclosed at para. 31.

The turbine nozzle vane in Koschier is located behind the combustor and upstream of the turbines; and the axial compressors in Stalker '663 and Stalker '910 are located upstream of the combustor, and well upstream of the turbine stages.

Accordingly, withdrawal of all of the rejections is warranted, and allowance of the rejected claims is warranted and is requested.

PATENT
Docket GE136081

Furthermore, withdrawal of the restriction requirement is now warranted, and due examination and allowance of the additional species claims is now warranted and requested for their corresponding deswirling capability in the exemplary STOVL engine application.

The species claims recite different configurations having the advantages disclosed in the specification for deswirling exhaust flow over the large swirl range found in STOVL turbofan engines. None of the applied references has any relevant teaching in this regard.

In accordance with the duty imposed by 37 CFR 1.104 and MPEP sections 707, 707.05, 707.07, and 707.07(g), the examiner is requested to reconsider all the art of record, including the additional references not applied, to ensure full compliance with the required thoroughness of examination.

An updated search by the examiner appears warranted to uncover references specific to turbine rear frames, since the three references uncovered by the examiner are clearly not relevant to turbine rear frames.

It is highly likely that many references will be found by the examiner for turbine rear frames, and will better support the allowability of the claims of record having special configurations for achieving the large deswirl range which is problematic for STOVL engines.

In updating the prior art search, the examiner will also likely uncover many references in which outlet guide vanes (OGVs) are found, typically behind the fan of a turbofan engine, as well as at the exhaust end of the turbine stages.

Outlet guide vanes are so called because of their special location at the outlet end of fans and turbines; and the special environments thereat; and the special construction required for being mounted in these outlet locations. The fan discharging cool fan air; and the turbine discharging the hot combustion gases.

And, Rule 104 mandates thoroughness of searching and

PATENT
Docket GE136081

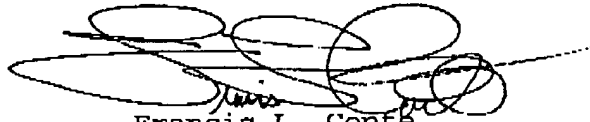
examination for claims presented in patent applications.

To be certain, the examiner should be able to uncover additional references specifically relevant to turbine rear frames in contradistinction to the irrelevant references Koschier, Stalker '663, and Stalker '910 which relate to disparate turbine nozzles and compressor components.

In re Portola Packaging, Inc., 42 USPQ2d 1295 (Fed. Cir. 1997) emphasizes the importance of complying with this duty to ensure that all references of record have been fully considered by the examiner in the various combinations thereof. And, the Board of Appeals has further elaborated on the importance of this examiner duty in Ex parte Schricker, 56 USPQ2d 1723 (B.P.A.I. 2000).

In view of the above remarks, allowance of all claims 1-32 over the art of record is warranted and is requested.

Respectfully submitted,



Francis L. Conte
Registration No. 29,630
Attorney for Applicant

Date: 14 October 2005

6 Puritan Avenue
Swampscott, MA 01907
Tel: 781-592-9077
Fax: 781-592-4618